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REPORT [redacted]

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COUNTRY Czechoslovakia

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SUBJECT Methods and Materials Used for Metal and Glass Sealing in Production of Electronic Tubes

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THIS IS UNEVALUATED INFORMATION

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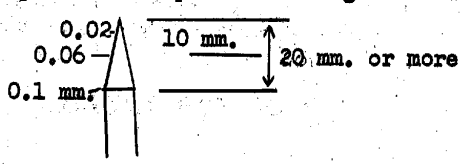
[redacted]

1. In production of all the high-powered vacuum tubes and all medium-powered vacuum tubes, the Czechoslovak Tesla Industry used nickel-iron as material for making the metal part to be sealed to the glass envelope. This nickel-iron was composed
50X1 of 48% nickel, 51% iron, and 1% of another metal [redacted]
50X1 The material was imported in sheet form from Sweden and Germany (most probably
50X1 West Germany). However, after 1949 the imports of this material showed down, and it was received only irregularly, in insufficient quantities. The Tesla-
50X1 Vrsovice Plant used material which had been stored in the plant prior to 1949 to make up for the insufficient imports. Czechoslovakia started the production of the nickel-iron alloy in the Fall of 1952. [redacted] furnaces
50X1 engaged in this production [redacted] may have been at Kladno or Vitkovice (Ostrava). The first tests of the Czechoslovak-produced alloy took place in Tesla-Vrsovice Plant at the end of 1952 and in early 1953. This material was not of the quality of the imported material and proved unsatisfactory. The coefficient of expansion was unsatisfactory. [redacted] this alloy has not yet been used in production.

2. A ring of about two millimeters thick and of various diameters was stamped out of the nickel-iron alloy, the size depending on the size of the vacuum tube. The ring was lathed to a knife edge at its outside circumference where it was to be sealed to the glass envelope. The shape of the ring is shown below:



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The ring was welded to the anode body with a silver welding rod, which was composed of 50 to 80% silver, the remainder copper. The glass envelope was sealed to the ring on a glass lathe, and while both parts (the anode with ring on one side and the glass envelope on the other side) were revolving, gas burners softened the glass until it finally sealed to the knife edge of the ring.

3. Lead glass was used in the production of most of the medium and high-powered vacuum tubes. Molybdenum glass was used only for those medium and high-powered tubes where the glass was exposed to high temperatures. In production of small receiver tubes magnesium glass was used, while die castings to form the base of the tubes were made of lead glass. For the production of small special vacuum tubes, lead glass, molybdenum glass or "Kovar" glass was used. Production of lead glass was at the glass works at Polubny /N 50-46, E 15-20/ and at Nizbor, somewhere in Beroun /N 49-54, E 14-05/ vicinity. The "Kavalir" Glass Works [redacted] 50X1
the exact name or location [redacted] might be Sazava /N 49-52, E 14-54/) produced 50X1
molybdenum and Kovar glass. Kovar glass was manufactured according to Western practice and its production started in Czechoslovakia sometime in the second half of 1952. The glass works at Utekac /N 48-76, E 19-48/ produced magnesium glass. 50X1
[redacted] the glass works mentioned herein were the only glass works in Czechoslovakia engaged in the production of glass for vacuum tubes.